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(54) Title: STEM-CELL, PRECURSOR CELL, OR TARGET CELL-BASED TREATMENT OF MULTI-ORGAN FAILURE AND RENAL DYSFUNCTION

(57) Abstract: Methods for the treatment of acute renal failure, multi-organ failure, early dysfunction of kidney transplant, chronic renal failure, organ dysfunction, and wound healing are provided. The methods include delivering a therapeutic amount of hematopoietic stem cells, non-hematopoietic, mesenchymal stem cells, hemangioblasts, and pre-differentiated cells to a patient in need thereof.

AMENDED CLAIMS

[received by the International Bureau on 7th March 2005 (07.03.05);
original claims 1-37 have been cancelled and new claims 1-59 have been added]

1. A method of treating multi-organ failure, kidney dysfunction, or wound healing, said method comprising delivering a therapeutic amount of stem cells to a patient in need thereof.

2. The method of claim 1 wherein said stem cells comprise hematopoeitic stem cells.

3. The method of claim 1 wherein said stem cells comprise mesenchymal stem cells.

4. The method of claim 1 wherein said stem cells comprise hemangioblasts.

5. The method of claim 1 wherein said stem cells comprise non-hematopoeitic stem cells.

6. The method of claim 1 wherein said stem cells comprise non-transformed stem cells.

7. The method of claim 1 wherein said stem cells comprise genetically modified stem cells, wherein protective potency of said cells is augmented by genetic modification prior to administration in a patient in need thereof.

8. The method of claim 1 wherein said stem cells comprise autologous cells.

9. The method of claim 1 wherein said stem cells comprise allogeneic cells.

10. The method of claim 1 wherein said kidney dysfunction comprises acute renal failure, early dysfunction of kidney transplant, or chronic renal failure.

11. The method of claim 1 wherein said cells are pre-differentiated into renal tubular cells, vascular endothelial cells or other kidney-or other organ specific cells.

12. The method of claim 4 wherein said hemangioblasts are pre-differentiated into endothelial cells.

13. The method of claim 2 wherein hematopoietic stem cells are pre-differentiated *in vitro*.

14. The method of claim 13 wherein said hematopoietic stem cells are pre-differentiated into endothelial cells.

15. The method of claim 3 wherein mesenchymal stem cells are pre-differentiated *in vitro*.

16. The method of claim 15 wherein said mesenchymal stem cells are pre-differentiated into endothelial cells.

17. The method of claim 15 wherein said mesenchymal stem cells are pre-differentiated into renal tubular cells.

18. A method of treating multi-organ failure, kidney dysfunction, wound healing or organ dysfunction comprising delivering a therapeutic amount of a stimulant of stem cell mobilization to a patient in need thereof;

wherein the stimulant mobilizes stem cells to the organs in need thereof.

19. The method of claim 18 wherein said stem cells comprise endothelial cells.

20. The method of claim 18 wherein said stem cells comprise endothelial precursor cells.

21. A method of treating organ dysfunction, said method comprising delivering a therapeutic amount of pre-differentiated stem cells to a patient in need thereof;

wherein said cells are pre-differentiated *in vitro* into organ specific cells.

22. A method of treating organ dysfunction, said method comprising delivering a therapeutic amount of hemangioblasts to a patient in need thereof.

23. Use of a therapeutic amount of stem cells in the manufacture of a medicament for treatment of multi-organ failure, kidney dysfunction, or wound healing.

24. The use of claim 23 wherein said stem cells comprise hematopoeitic stem cells.

25. The use of claim 23 wherein said stem cells comprise mesenchymal stem cells.

26. The use of claim 23 wherein said stem cells comprise hemangioblasts.

27. The use of claim 23 wherein said stem cells comprise non-hematopoeitic stem cells.

28. The use of claim 23 wherein said stem cells comprise non-transformed stem cells.

29. The use of claim 23 wherein said stem cells comprise genetically modified stem cells, wherein protective potency of said cells is augmented by genetic modification prior to administration in a patient in need thereof.

30. The use of claim 23 wherein said stem cells comprise autologous cells.

31. The use of claim 23 wherein said stem cells comprise allogeneic cells.

32. The use of claim 23 wherein said kidney dysfunction comprises acute renal failure, early dysfunction of kidney transplant, or chronic renal failure.

33. The use of claim 23 wherein said cells are pre-differentiated into renal tubular cells, vascular endothelial cells or other kidney-or other organ specific cells.

34. The use of claim 26 wherein said hemangioblasts are pre-differentiated into endothelial cells.

35. The use of claim 24 wherein hematopoietic stem cells are pre-differentiated *in vitro*.

36. The use of claim 35 wherein said hematopoietic stem cells are pre-differentiated into endothelial cells.

37. The use of claim 25 wherein mesenchymal stem cells are pre-differentiated *in vitro*.

38. The use of claim 37 wherein said mesenchymal stem cells are pre-differentiated into endothelial cells.

39. The use of claim 37 wherein said mesenchymal stem cells are pre-differentiated into renal tubular cells.

40. Use of a therapeutic amount of a stimulant of stem cell mobilization in the manufacture of a medicament for the treatment of multi-organ failure, kidney dysfunction, wound healing or organ dysfunction;

wherein the stimulant mobilizes stem cells to the organs in need thereof.

41. The use of claim 40 wherein said stem cells comprise endothelial cells.

42. The use of claim 40 wherein said stem cells comprise endothelial precursor cells.

43. Use of hemangioblasts in the manufacture of a medicament for the treatment of organ dysfunction.

44. Use of pre-differentiated stem cells in the manufacture of a medicament for the treatment of organ dysfunction wherein said cells are pre-differentiated *in vitro* into organ specific cells.

45. A method of treating multi-organ failure, kidney dysfunction, organ dysfunction, or wound healing, said method comprising delivering a therapeutic amount of a mixture hematopoietic stem cells and mesenchymal stem cells to a patient in need thereof.

46. The method of claim 45 wherein said kidney dysfunction comprises acute renal failure, early dysfunction of kidney transplant, or chronic renal failure.

47. The method of claim 45 wherein said hematopoietic stem cells and said mesenchymal stem cells comprise autologous cells.

48. The method of claim 45 wherein said hematopoietic stem cells and said mesenchymal stem cells comprise allogeneic cells.

49. The method of claim 45 wherein a ratio of said hematopoietic stem cells to said mesenchymal stem cells is optimized for the treatment of kidney dysfunction or other organ dysfunction.

50 The method of claim 49 wherein said stem cells are delivered to said patient in a ratio of about 0.1:1 to about 50:1 hematopoietic stem cells to mesenchymal stem cells.

51. A composition for the treatment of multi-organ failure, organ dysfunction, or wound healing, said composition comprising a therapeutic amount of hematopoietic stem cells and mesenchymal stem cells.

52. The composition of claim 51 wherein said kidney dysfunction comprises acute renal failure, early dysfunction of kidney transplant, or chronic renal failure.

53. The composition of 51 wherein a ratio of said hematopoietic stem cells to said mesenchymal stem cells is optimized for the treatment of kidney dysfunction or other organ dysfunction.

54. Use of a therapeutic amount of hematopoietic stem cells and mesenchymal stem cells in the manufacture of a medicament for the treatment of multi-organ failure, or kidney dysfunction, organ dysfunction, and wound healing.

55. The use of claim 54 wherein said kidney dysfunction comprises acute renal failure, early dysfunction of kidney transplant, or chronic renal failure.

56. The use of claim 54 wherein said stem cells comprise autologous cells.

57. The use of claim 54 wherein said stem cells comprise allogeneic cells.

58. The use of claim 54 wherein said stem cells are delivered to a patient in a hematopoietic to mesenchymal stem cell ratio that is optimized for the treatment of acute renal failure or other organ dysfunction.

59. The use of claim 58 wherein said stem cells are delivered to said patient in a ratio of about 0.1:1 to about 50:1 hematopoietic stem cells to mesenchymal stem cells.